Hudson Refinery Site (Payne County) Oklahoma

EPA REGION 6
CONGRESSIONAL DISTRICT 03

EPA ID# OKD082471988
Site ID: 0601160

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Background

The Hudson Refinery Superfund Site is located in Payne County Oklahoma. The 200-acre site is located on the west side of the City of Cushing, Oklahoma. The Site is divided by State Highway (SH) 33 with 165 acres north of SH 33 (North Refinery) and 35 acres south of SH 33 (South Refinery). The Site is an abandoned refinery that operated from 1922 until ceasing operation in 1982. The Site historically included aboveground storage tanks, wastewater treatment impoundments, separators, stained soils, a land treatment unit, and loose and friable asbestos containing material.

On March 24, 1999, EPA signed a Removal Action Memorandum to perform the emergency cleanup activities on both the North and South Refineries. The Removal Action Memorandum documented EPA's determination that the Site presented an imminent and substantial threat to public health and the environment. Initial removal activities were focused on the South Refinery and included investigation of radiation sources, demolition of structurally unsafe buildings, removal of tetra-ethyl lead (TEL), asbestos-containing material (ACM) abatement, and disposal of waste containing hazardous substances. In addition, removal activities included excavation of oil-contaminated soils; removal of product from above-ground storage tanks (ASTs), separators, and sumps; and construction of a bioremediation land-treatment unit for biotreatment of Oil Pollution Act (OPA) wastes. Some removal activities occurred on the North Refinery and included the dismantling of hydrofluoric acid alkylation unit which included approximately 5,600 gallons of product, removal of all catwalks from the towers that were left standing, and the removal of TEL ASTs. From September 2002 through June 2003 EPA conducted a non-time-critical removal action. The areas addressed in this removal action were the: 1) superstructures, refinery process units containing potential hazardous chemicals and substances; and 2) miscellaneous items, including unlined collection basins, a sump, and structurally unsafe buildings. Existing refinery process equipment and structures were dismantled and removed from the site. Friable ACM was removed from process equipment and piping in coordination with decontamination and removal activities. Few structures currently remain on the site.

Contaminants of Concern (COC) are: Soil - Benzeno(a)pyrene, Arsenic, and Lead; Sediments - Benzo(a) pyrene and Benzo(a)anthracene; Surface Water – Benzo(a)pyene; and Ground Water – Benzene and Thallium.

Surrounding the site are residential and agricultural lands to the north and commercial properties to the south. There are approximately 8,371 residents in the City of Cushing.

On November 23, 2007, Region 6 issued the Record of Decision (ROD) that includes removal of Asbestos-Containing Material, Coke Tar and Scrap Metal; soil and waste excavated and transported to an off-site disposal facility; sediment from waste ponds and sumps will be excavated, stabilized and disposed off-site; surface water from ponds with contaminated sediment and water from ponds that are leveled will be treated on-site; Light non-aqueous phase liquid – Hydrocarbon belt Skimmers will be implemented as needed and monitoring will be implemented; a ground water monitoring plan will be developed and institutional controls will be implemented. Cleanup construction for this site started in early 2010 and was completed in October 2010.

A Unilateral Administrative Order, signed January 6, 2009, was sent to the company, Land O'Lakes, requiring it to implement the Site remedy outlined in the Record of Decision (ROD). It is EPA policy for parties that were responsible for site contamination to conduct and pay for the clean up of Site contamination.

Current Status

- In August 2011, a new area of potential concern was observed. A small area of coke tar waste and a surface level pipeline were identified in the northeast area of the South Refinery. Land O'Lakes submitted a clean up approach in amended work plans for the waste and pipeline. Clean up for these areas was completed in October 2012. The excavation has been backfilled. Work was coordinated with the Oklahoma Department of Transportation and the City of Cushing to address coke tar waste that extended north of the property boundary of the South Refinery onto the right-of-way for SH33. The former refinery coke tar waste also extended to a City of Cushing water line located in the highway right-of–way.

- Work to establish permanent vegetation cover was conducted during the spring and summer of 2011. Due to the excessive heat and drought conditions experienced during the 2011 summer additional re-vegetation work was needed. Site re-vegetation activities will continue through the end of the 2012 growing season.

- The overall clean-up strategy for this Site has been to reduce the amount of contamination in soil, waste pond sediment, waste pond surface water, and ground water to protect humans, animals, and plants.

- Starting in May 2010, Land O'Lakes began cleanup of the wastewater ponds on the portion of the Site north of Highway 33. Clean-up steps included: removing water from the ponds, removing pond sediments that needed to be cleaned up, and filling in and grading the ponds so they would not

hold water. Land O'Lakes discharged the pond water into Skull Creek at points along Depot Street north of Highway 33. The pond water was tested for pollutants. EPA and the Oklahoma Department of Environmental Quality (ODEQ) reviewed the results of the testing and determined that it was safe to discharge the water into Skull Creek.

- Land O'Lakes completed the construction for cleanup of contaminated soil, wastewater pond sediment, coke tar, asbestos containing debris, and tank and scrap metal from the Site as outlined in the Record of Decision (ROD). Contaminated soil, wastewater pond sediment, and coke tar cleanup took place at various locations across the Site. Debris containing asbestos and two surface pipes wrapped with asbestos insulation were removed from the Site. The final excavation of waste and contaminated soil was completed in early October 2010. All waste and contaminated soil and sediment have been hauled off Site for disposal in an approved commercial landfill. Site excavations have been backfilled and graded. Two existing ponds have been modified to moderate the amount of storm water leaving the Site into Skull Creek.

- Need for Explanation of Significant Differences (ESD): On November 19, 2010, the EPA signed an ESD for the Site. The Superfund Program allows for changes in the remedy presented in the Record of Decision (ROD) if the remedial action taken differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost. Significant Changes are those changes that generally involve a change to a component of the selected remedy, but do not fundamentally alter the overall cleanup approach. Work for some of the changes has already been completed. The ESD explains the differences between the cleanup action presented in the ROD and the cleanup action that has or will be completed onsite. The ESD outlined six significant changes from the ROD; it also documented minor changes. Brief descriptions of the six significant changes are included below: Wastewater Pond 6, Treatment Pond 8, and Runoff Pond 9 - Wastewater Pond 6, Treatment Pond 8, and Runoff Pond 9 will remain in service so that during a given precipitation event, storm water runoff from the Site will not be discharged to Skull Creek at higher flow rates than would currently occur for a like precipitation event. Ponds that required removal of contaminated sediment (Aeration Pond 7, Wastewater Ponds 1 through 3, and the Coke Pond) were not completely backfilled, but backfilled to provide a minimum of 2 ft. of clean cover soils, and then graded to promote runoff and prevent ponding of storm water runoff during precipitation events. Clean soils contained in the berms of Aeration Pond 7 and Wastewater Ponds 1-5 were utilized as borrow materials during Site backfilling and grading operations.

- Asbestos-Containing Material (ACM) – ACM volume addressed during remedy construction increased in volume from the ROD estimate. The ROD estimated the volume of ACM requiring removal as 10 cubic yards. Additional ACM was found during the RA. 460.82 cubic yards of ACM impacted soil/debris were removed from the Site and properly disposed. A total of 719 linear feet of ACM wrapped pipe was also removed; the piping weighed 1.7 tons. Scrap Metal – The volume/weight of tank and scrap metal debris, along with excavated piping, addressed during RA construction increased from the ROD estimate. The term "construction debris" was used by the landfill for general debris, building material, and contaminated soil mixed with concrete chunks, brick, and metal waste. The estimated volume of construction debris removed during the RA was 3,294 cubic yards calculated at 2.2 tons per cubic yard. Scrap metal, tank metal and piping weight hauled off-site for recycle or disposal was logged separately. The final weight for scrap metal, tank metal and piping was 242.62 tons.

- Ground Water Monitoring for Thallium – Thallium monitoring has been removed from ground water monitoring requirements. Thallium monitoring was conducted during the RD and during RA construction. Thallium was not detected in any of the ground water samples. Laboratory detection levels were well below the ROD cleanup level of 2.0 µg/L.

- Proper Plugging and Abandoning of Site Wells – Site wells which will not be part of operation and maintenance activities for ground water monitoring will be required to be properly plugged and abandoned. Institutional Controls – Site ownership has changed which affects filing of institutional controls required by the ROD.

- The remaining remedial action work includes continuing erosion control activities, completion of establishing permanent vegetation cover, institutional controls, and ground water monitoring. The institutional controls will include deed notices placed on land parcels that are contained in the Site. EPA-required deed notices will identify the reason for the notice, the affected property, the remedy, engineering controls, land use restrictions, and ground water use restrictions prohibiting use of the shallow ground water. Land O'Lakes will continue to provide monthly progress reports. Updating reports and plans is on-going.

Benefits

The cleanup of the contaminated media at the Hudson Oil Refinery Superfund site will reduce the health and ecological risks associated with the remaining contamination.

National Priorities Listing (NPL) History

NPL Inclusion Proposal Date:	April 23, 1999
NPL Inclusion Final Date:	July 22, 1999
NPL Deletion Proposal Date:	n/a
NPL Final Deletion Date:	n/a

Location: The Hudson Refinery site is located in Cushing, Payne County, Oklahoma. Surrounding the site are residential and agricultural lands to the north and commercial properties to the south. Highway 33 (Main Street) separates the site into a "north" and "south" refinery. The "North Refinery" consists of approximately 165 acres, and the "South Refinery" is approximately 35 acres.

Setting: Historical aerial photographs indicate the site operated as a refinery beginning as early as the mid-1920s. Refining operations ended in 1982, and the site was abandoned. The site historically included aboveground storage tanks, wastewater treatment impoundments, separators, stained soils, a land treatment unit, and loose and friable asbestos containing material. Runoff from the site enters on-site wetlands and storm water collection ponds. The tanks, piping and most of the refinery superstructure were removed from the site during the EPA removal actions. Land O'Lakes completed the cleanup of contaminated soil, wastewater pond sediment, coke tar, asbestos containing debris, and tank and scrap metal from the Site in October 2010.

Population: There are approximately 8,371 residents in the City of Cushing.

Site Map

Health Considerations

There was a potential exposure threat to human health through ingestion, dermal contact, or inhalation of soil or surface water from the site due to hazardous chemicals present at the site prior to completion of construction of site cleanup in October 2010. These materials presented both a cancer and non-cancer risk to human health. Some of the more toxic chemicals residuals existing at the site prior to cleanup were TEL, hydrogen sulfide, benzene, hydrosulfuric acid, hydrofluoric acid, hydrochloric acid, mercury, arsenic, chromium, lead, ammonia, and calcium hypochlorite. Asbestos containing material associated with the piping and vessels at the facility were friable, had weathered and deteriorated over time posing an increasing risk of release to the air. All aboveground tanks on the site containing some of the more toxic chemicals and the asbestos piping were removed during the 1998 and 2002 removals.

Record of Decision (ROD)

Soil, waste pond sediment, waste pond surface water, ground water, and other media
ROD signed November 23, 2007

The ROD was signed on November 23, 2007. The cleanup decision includes:

- Institutional Controls – The process and tanks areas of the Site will be available for a reasonably anticipated reuse of commercial/industrial; therefore, Institutional Controls (ICs) will be required to aid in the management of waste left on-site for each of media listed below. ICs will include deed notices placed on land parcels that are contained in the Site. The deed notices will identify the reason for the notice, the affected property, the remedy, engineering controls, land use restrictions, and ground water use restrictions prohibiting use of the shallow ground water. An easement may also be granted by the landowners for continued remedial response. The deed notices will be filed by the ODEQ should the property owner decline. The city currently has an ordinance in place that prohibits Site access with the exception of EPA, ODEQ, and federal/state remediation contractors until completion of Site cleanup. Current Site zoning is for industrial use.
- Other Media – Removal of Asbestos-Containing Material (ACM), Coke Tar, and Scrap Metal – ACM will be excavated, containerized, and transported to a regulated off-site disposal facility. Coke tar will be excavated, stabilized, and transported to a regulated off-site disposal facility. Material, including tanks and metal debris, that remains at the Site will be removed and salvaged. If any of the material is not salvageable, it will be disposed of at an authorized off-site disposal facility.
- Soil – Excavation and Off-site Disposal at Permitted Facility – Soil and waste will be excavated and transported to an off-site disposal facility. These areas include the North Refinery (North Tank Farm Area) and South Refinery (South-South Tank Farm Area, South Process Area, Northeast-South Tank Farm Area, North-South Tank Farm Area, and South Refinery Other Areas).
- Waste Pond Sediment – Excavation, Stabilization and Off-site Disposal at Permitted Facility – Contaminated sediment from waste ponds and sumps will be excavated, stabilized, and transported to an off-site disposal facility. These sediments will be excavated from the Aeration Pond 7 and Sumps, Wastewater Ponds 1 and 2, and the Coke Pond. The ponds will be backfilled, revegetated, and closed.
- Waste Pond Surface Water – On-site Treatment – Surface water from the ponds with contaminated sediment and water from ponds that are leveled to ensure proper site drainage will be treated on-site and discharged or transported off-site for disposal.

- Light Non-Aqueous Phase Liquid – Hydrocarbon Belt Skimmers – Light non-aqueous phase liquid (LNAPL) recovery skimmers and monitoring will be implemented where LNAPL has been observed. Recovered LNAPL will be contained in drums for off-site disposal or recycling.
- Ground Water – Ground Water Monitoring – A ground water monitoring plan will be developed during the remedial design and implemented to further delineate ground water contamination. The ground water analytical data collected will be evaluated to identify the potential for off-site migration to occur and to ensure that the areas with contamination are stable and/or decreasing.

Site Contacts

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EPA Public Liaison	Donn R. Walters	214-665-6483 or 800-533-3508
EPA Site Attorney:	George Malone	214-665-8030 or 800-533-3508
ODEQ Oklahoma State Contact:	Dennis Datin	405-702-5125